

Review articles: 2. The literature jungle

From the Editors

The medical literature can be compared to a jungle. It is fast growing, full of deadwood, sprinkled with hidden treasure and infested with spiders and snakes.

Growth. The United States National Library of Medicine (NLM) indexes about 250 000 new articles each year from only 3200 of the 20 000 or so medical periodicals in publication today.¹ Medical publishing luxuriates not only because medicine itself is a growing and differentiating field but also because its members can get their papers published relatively easily in the many clinical journals whose demand for scientific copy is driven by their success in selling advertising.

Deadwood. The medical literature is probably the most redundant of all scientific literatures. Compare articles on similar topics in a British and an American journal. Invariably, there is a citation bias in favour of the journal's own national literature. It's hard to believe that medical researchers are producing largely independent bodies of knowledge on either side of the Atlantic. It's also unlikely that the authors have evaluated their gleanings from a thorough search and decided that after all they prefer their own and their colleagues' work. Most likely, the authors tacitly recognize that the medical literature is so redundant that a search close to home will bring in all the references they need for scientific validity and immediate relevance.

Hidden treasure. It's true that in fast-moving research fronts, especially in the biologic sciences, recent papers in the

dominant journals are likely to have or cite what the reader of a review article needs to know, but a few significant papers may be ignored at first.² If the review article is on the social or health care aspects of medicine, a body of literature that is scattered among a wide variety of journals, the authors will not have all the relevant articles on hand. *CMAJ's* expert manuscript reviewers often comment that a Current Review article fails to cite relevant articles they know of, and we are dismayed to find that submitted reviews often fail to cite a recent and relevant article in our own journal.

Review articles should be based on a computer search of the literature, but a poorly organized search can waste time and money. Two measures of efficiency have been proposed: "precision" and "recall". Precision is the proportion of appropriate articles to the total number of articles retrieved. Recall is the ratio of the number of articles captured in the search to the number of articles in the literature that are appropriate. This ratio, of course, has to be checked by a method other than the one being evaluated. MEDLINE will find articles in NLM's database by keywords, textwords or authors' names; some idea of the completeness of recall can be gained by checking other articles to see whether they cite relevant papers that were not picked up in the electronic search. Although an essential resource, MEDLINE is by no means complete: it does not index all medical journals, it does not go back before 1965, and it runs about 2 months behind the publication date. The Citation

Index volume of the Science Citation Index, published by the Institute for Scientific Information (ISI), offers another way of checking recall: it shows the articles currently citing an earlier article. Searchers can pick out "classics" in their field and find out which authors are citing them each year. Such a search may uncover related research in a less familiar body of literature that could enrich or redirect the article. Precision and recall are inversely related; usually searchers try to increase precision at the expense of recall. The search is usually called off when it ceases to yield a satisfactory proportion of "novel" references.

A review article should be as current as possible. Information systems are available to monitor some of the literature as it is published. Subscribers to ISI's ASCA (Automatic Subject Citation Alert) receive copies of articles in a defined field as they appear. Larger medical libraries offer a similar tracking service. Two publishers are now putting the "full text" (minus tables and figures) on line in a computer database as soon as the journal is published. This form of retrieval is useful for clinicians in a hurry to find out about the latest treatments or for residents preparing for tomorrow's roundsmanship, but without tables and figures some texts will tell the reviewer little more than do their abstracts. Such databases should, however, be well suited to review articles, since these rely less on tables and figures than do research papers.

Spiders and snakes. It's humbling to read that a good proportion of the articles in the

general medical literature have been rejected by the *New England Journal of Medicine* before being published in the source journal.³ Not all of these papers are "spiders" or "snakes", of course. Many top-ranking journals reject articles as much because of their subjects as because they are unsound. Nevertheless, these same journals have recently become uneasy about their own papers and periodically bewail their shortcomings in methodologic reviews.

The medical journal review article is an "intermediary filter" between the journal and the book.⁴ I think its authors have two challenges in quality filtering: to discard work that is scientifically unsound and to assign a weight or relative value to articles that they include in their references. Both tasks require some understanding of study design as well as expertise in the subject. The McMaster University group's articles on how to read clinical journals⁵ review the epidemiologic principles that the reader should use in judging the quality of studies based on clinical populations, but of course the reader of a review article surrenders this option to its authors.

Review articles will become increasingly popular as the size of the jungle of medical literature doubles every 10 years.⁶ The number of review journals and

books continues to increase as more authors learn how to use the computer to search the literature. Writing review articles will be more competitive, but it also will be more rewarding, professionally and perhaps even financially. The next essay on review articles will outline a modern approach to selecting and evaluating scientifically robust studies and will discuss some of the current forms of review articles.

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Manual or machine searching?

The logic of an information search is not essentially different when it is performed in manual or machine form. However, in the machine form the logic and the mechanisms are highly visible and must be articulated in the process of the search, while in manual systems one can more easily test and add term coordinates as individual terms are searched, a useful advantage particularly when all term coordinates cannot be specified in advance.

—Kronick DA: *The Literature of the Life Sciences: Reading, Writing, Research*, ISI Pr, Philadelphia, 1981: 146

AN EFFECTIVE SOLUTION TO SEVERE COUGHS

CoACTIFED

Tablets/Syrup/Expectorant
Antitussive—Expectorant—Decongestant

Indications: CoActifed Expectorant: To facilitate expectoration and control cough associated with inflamed mucosa and tenacious sputum.

CoActifed Syrup and Tablets: The treatment of cough associated with inflamed mucosa.

Precautions: Before prescribing medication to suppress or modify cough, it is important to ascertain that the underlying cause of the cough is identified, that modification of the cough does not increase the risk of clinical or physiologic complications, and that appropriate therapy for the primary disease is provided.

In young children the respiratory centre is especially susceptible to the depressant action of narcotic cough suppressants. Benefit to risk ratio should be carefully considered especially in children with respiratory embarrassment, e.g., croup. Estimation of dosage relative to the child's age and weight is of great importance.

Since codeine crosses the placental barrier, its use in pregnancy is not recommended.

As codeine may inhibit peristalsis, patients with chronic constipation should be given CoActifed preparations only after weighing the potential therapeutic benefit against the hazards involved.

CoActifed contains codeine: may be habit forming.

Use with caution in patients with hypertension and in patients receiving MAO inhibitors.

Patients should be cautioned not to operate vehicles or hazardous machinery until their response to the drug has been determined. Since the depressant effects of antihistamines are additive to those of other drugs affecting the CNS, patients should be cautioned against drinking alcoholic beverages or taking hypnotics, sedatives, psychotherapeutic agents or other drugs with CNS depressant effects during antihistaminic therapy.

Adverse Effects: In some patients, drowsiness, dizziness, dry mouth, nausea and vomiting or mild stimulation may occur.

Overdose: Symptoms: Narcosis is usually present, sometimes associated with convulsions. Tachycardia, pupillary constriction, nausea, vomiting and respiratory depression can occur.

Treatment: If respiration is severely depressed, administer the narcotic antagonist, naloxone. Adults: 400 µg by i.v., i.m. or s.c. routes and repeated at 2 to 3 minute intervals if necessary. Children: 10 µg/kg by i.v., i.m., or s.c. routes. Dosage may be repeated as for the adult administration. Failure to obtain significant improvement after 2 to 3 doses suggests that causes other than narcotic overdose may be responsible for the patient's condition.

If naloxone is unsuccessful, institute intubation and respiratory support or conduct gastric lavage in the unconscious patient.

Dosage: Adults and children over 12 years: 10 mL or 1 tablet 4 times a day. 6 to 12 years: 5 mL or ½ tablet 4 times a day. Infants and children to 6 years: 2.5 mL 4 times a day.

Supplied: Expectorant: Each 5 mL of clear, orange, syrupy liquid with a mixed fruit odor contains: triprolidine HCl 2 mg, pseudoephedrine HCl 30 mg, guaifenesin 100 mg, codeine phosphate 10 mg. Available in 100 mL and 2L bottles.

Syrup: Each 5 mL of clear, dark red syrupy liquid with a pineapple odor and a sweet black currant flavor contains: triprolidine HCl 2 mg, pseudoephedrine HCl 30 mg and codeine phosphate 10 mg. Available in 100 mL and 2L bottles.

Tablets: Each white to off-white, biconvex tablet, code number WELLCOME P4B on same side as diagonal score mark, contains: triprolidine HCl 4 mg, pseudoephedrine HCl 60 mg and codeine phosphate 20 mg. Each tablet is equivalent to 10 mL of syrup. If tablet is broken in half, it reveals a yellow core. Bottles of 10 and 50 tablets.

Additional prescribing information available on request.



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BURROUGHS WELLCOME INC.
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This product has a potential for being abused.

PAAB

*Trade Mark W-523